

Application No.: 10/530,351
Examiner: HUSON, M.A.
Art Unit: 1732

AMENDMENT

Please amend the pending application in accordance with the following particulars.

In the Claims

The claims are amended as shown on the following pages under the heading AMENDMENT TO THE CLAIMS. The list shows the status of all claims presently in the application and is intended to supersede all prior versions of the claims in the application. Any cancellation of claims is made without prejudice or disclaimer.

AMENDMENT TO THE CLAIMS

Claim 1 (Currently Amended). Method for manufacturing plungers for medical syringes, said plunger comprising at least two parts including a longitudinal plunger body made of plastic and a piston body provided at [[the]] a front end of the plunger body, which piston body comprises a plastic which is softer than the plastic of the plunger body, wherein said plunger, or at least a part of the plunger, is formed by first manufacturing the piston body and then the plunger body, or at least a part of the plunger body, by means of injection moulding, and wherein the plunger body, or said part of the plunger body, is injected against the piston body, said piston body having a front side and a side wall and being formed such that the front side and side wall thereof are free of any flash lines and/or, ~~such that the front side and side wall thereof are free of~~ gate points for the plastic.

Claim 2 (Canceled).

Claim 3 (Currently Amended). Method according to claim 1, wherein the piston body and the plunger body, or said part of the plunger body, are connected solely by the adhesion between the plastics out of which they are made, without any meshing parts [[,]] or counter drafts ~~or the like~~ being formed thereby.

Claim 4 (Currently Amended). Method according to claim 1, wherein at least one inwardly directed part defining a counter draft is formed on the piston body, and use is made during the injection moulding of a mould part having a protruding part in which one or several lateral recesses are provided ~~and/or a protruding part having one side~~ forming a counter draft, such that the mould part may be removed from the piston body due to the elastic flexibility of the material of the piston body, to thereby enable the protruding part to be pulled from the formed piston body.

Claim 5 (Previously Presented). Method according to claim 1, wherein the plastic forming the piston body is provided in a respective mould cavity via a back side of the piston body to be formed.

Claim 6 (Previously Presented). Method according to claim 1, wherein the piston body is formed in a first mould cavity, after which the piston body, while it is still held in a first mould cavity or a part thereof, is presented to a second mould cavity in which the plunger body, or the part of the plunger body, is then injected against the piston body by means of injection moulding, and wherein mould cavities are used having such a shape that the resulting plunger body or the part of the plunger body, and the piston body are connected to each other due to their shape and/or adhesion between the plastics.

Claim 7 (Currently Amended). Method according to claim 6, wherein while the plunger body or the ~~of the~~ plunger body part is formed such that it connects to the piston body, a subsequent piston body is simultaneously being formed by means of a connector nozzle with which the first piston body is formed, but in another mould cavity.

Claim 8 (Previously Presented). Method according to claim 1, wherein the piston body is formed in a mould with mould parts whose partial surface mainly coincides with a rear side of the piston body to be formed or extends parallel thereto, after which a mould part with the piston body provided in it is presented against other mould parts in which the plunger body or the part of the plunger body is formed.

Claim 9 (Currently Amended). Method according to claim 1, wherein when forming the plunger or a part of the plunger, an accessory is also formed which is

located with at least a part thereof on [[a]] the front side of the piston body, and which comprises a material which is different from the material of the piston body.

Claim 10 (Previously Presented). Method according to claim 9, wherein the material of the accessory comprises a plastic which is harder than the plastic out of which the piston body is formed.

Claim 11 (Currently Amended). Method according to claim 9, wherein accessory comprises a part which extends frontally from [[a]] the front side of the piston body and which, when the plunger is situated in the syringe, can at least partially penetrate in an outlet of the syringe, in order to be able to optimally empty the syringe.

Claim 12 (Currently Amended). Method according to claim 9, wherein the accessory comprises a part which enables creation of a passage between [[a]] the front side and a rear side of the piston body when emptying the syringe in order to prevent the syringe from being re-used.

Claim 13 (Currently Amended). Method according to claim 9, wherein the accessory can be made in a shape selected from the following shapes:

- as a part made in one piece with the plunger body or said part of the plunger body, and thus formed simultaneously with the plunger body or part thereof during the injection moulding;
- as a separate part provided on [[a]] the front side of the piston body;
- as a separate part provided on [[a]] the front side of the piston body, wherein such separate part is injected against the material of the piston body after the piston body has been formed.

Claim 14 (Previously Presented). Method according to claim 1 wherein, in the case where only a part of the plunger body is injected against the piston body, such plunger body part is made as an insert, whereby it is possible to provide for a connection with the rest of the plunger body at a later stage.

Claim 15 (Previously Presented). Method according to claim 1, wherein, instead of being used for manufacturing plungers with a longitudinal plunger body the method is used for manufacturing plungers of the type intended to be used in combination with a drive element, wherein each such plunger then comprises a piston body and a plunger part, such that the plunger part is configured to co-operate with such drive element.

Claim 16 (Currently Amended). Method for manufacturing plungers for medical syringes having at least a piston body comprising forming a part of the piston body at the location of the piston body which protrudes frontally from a front side of the piston body and which, when the plunger is located in a syringe, can penetrate at least partially through an outlet of the syringe, wherein said piston body part is formed of a material which is different from the material of the piston body, and wherein the materials forming the piston body on the one hand and the aforesaid protruding part on the other hand are injected against one another such that said piston body ~~be~~ is made in one piece with a plunger body belonging to the plunger.

Claim 17 (Withdrawn). Device for applying the method according to claim 1, comprising a number of mould parts defining at least a first mould cavity and a second mould cavity for forming the piston body and the plunger body, or a part of the plunger body, respectively; a motion mechanism enabling movement of the mould parts in relation to one another and to position them differently so that, in a first position, the piston body can be injected, and in a second position, the plunger body

or the plunger body part can be injected against the piston body; and an injection device arranged to supply the plastic to be injected to the mould cavities, wherein in the first position, the partial surface of the mould parts that form the mould cavity of the piston body coincide with a rear side of said piston body.

Claim 18 (Withdrawn). Device according to claim 17, wherein the first mould cavity is mainly situated in a single mould part and in that the motion device comprises a mechanism with which said first mould part (13) with the mould cavity provided in it can be moved between at least two positions, namely a first position whereat the mould cavity is mainly sealed and is connected to a first nozzle for injecting a first plastic on the one hand, and a second position whereat the mould cavity connects to the second mould cavity, such that the latter is connected to a second nozzle for injecting a second plastic, on the other hand.

Claim 19 (Withdrawn). Device according to claim 18, comprising two or more first mould cavities configured for the formation of piston bodies which are situated such that one of these first mould cavities can work in conjunction with the first nozzle, while another one of the first mould cavities is simultaneously being presented to the second mould cavity, and wherein the motion device moves the first mould cavities in such a manner that the first mould cavities are systematically and repeatedly presented to the first nozzle and the second mould cavity.

Claim 20 (Withdrawn). Device according to claim 17, wherein the motion device comprises a rotating indexing mechanism, whose axis of rotation extends in a direction which is different from the direction or directions of movement according to which the mould parts which are required to form the mould cavities open and close.

Claim 21 (Withdrawn). Device according to claim 17, wherein the injection device comprises two nozzles for injecting two plastics respectively, and in that both nozzles are provided in one and the same mould part or in one and the same whole, comprising rigidly connected mould parts.

Claim 22 (Withdrawn). Device according to claim 17, wherein the injection device comprises two nozzles, for injecting two plastics respectively, and in that both nozzles open into parallel land areas of the respective mould parts.

Claim 23 (Withdrawn). Device according to claim 17, wherein the mould cavities are formed of mould parts which together define three partial surfaces, namely surfaces whose mould cavities open and close, and wherein the partial surfaces are disposed step-like in relation to each other.

Claim 24 (Withdrawn). Device according to claim 17, wherein the mould three mold parts which can be mutually moved, including a first mold part and a second mold part respectively, which can be placed against each other by means of a translation movement, or can be moved away from each other, and a third mold part which can be moved between at least two positions, namely a first position in which the third mold part at least co-operates with the first mold part in order to define the first mould cavity, on the one hand, and a second position in which a third mold part at least co-operates with the first mold part as well as the second mold part in order to define the second cavity mould, such that the second mold cavity opens to a part of the plunger formed in the first mould cavity.

Claim 25 (Withdrawn). Device according to claim 24, wherein the third mold part is rotatable and can also be translated in relation to the first mold part and the second mold part in order to facilitate the opening and sealing of the mould cavities.

Claim 26 (Withdrawn). Device according to claim 24, wherein the second mold part and third mold part are mounted on a common support such that they can be mutually moved, which support may be mutually moved in turn in relation to the first mold part.

Claim 27 (Withdrawn). Syringe for medical purposes, comprising of which at least a part has been formed according to the method of claim 1.

Claim 28 (Withdrawn). Syringe for medical purposes, comprising at least a cylinder body with an outlet which is formed of a narrowed outlet part, as well as a plunger working in conjunction with the cylinder body which is provided with a piston body and a plunger body, wherein the plunger comprises a plunger part which protrudes frontally from the front side of the piston body and which can penetrate at least partially through said outlet part, wherein the plunger part is formed of a material which is different from the material of the piston body.

Claim 29 (Withdrawn). Syringe according to claim 28, wherein the plunger part which protrudes frontally from the front side of the piston body comprises either of the following:

- a part made in one piece with the plunger body or made in one piece with a part of the plunger body;
- a separate part disposed on the piston body.

Claim 30 (Withdrawn). The syringe as claimed in claim 28, wherein the plastic forming the plunger part is harder than the plastic forming the piston body.